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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,420	10/24/2001	Richard B. Ertel	907B.0002.U1(US)	7185

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EXAMINER
DAVIS, CYNTHIA L

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 09/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)	
	10/037,420	ERTEL ET AL.	
	Examiner	Art Unit	
	Cynthia L. Davis	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *8/1/2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-4,6-10,12-16 and 18* is/are rejected.

7)☒ Claim(s) *5,11 and 17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 7, and 13 have been considered but are moot in view of the new ground(s) of rejection.

Regarding claims 4, 6, and 10, Yun is concerned with estimating the power levels of channels assigned to mobile users. In CDMA, a spreading code is a channel (see Yun, column 2, lines 22-23).

2. Applicant's arguments with respect to claims 5, 11, and 17, have been fully considered and are persuasive. The rejection of the claims has been withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4, 6-10, 12-16, and 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Yun in view of Ayagari.

Regarding claim 1, within a coverage area of a base station (BS) having a multi-element antenna array, estimating a spatial signature vector (SSV) for a current subscriber station is disclosed in column 5, lines 45-47 (the spatial signature) and column 6, Lines 33-36 (the array) of Yun. Using the estimated SSV as a weight vector is disclosed in column 6, lines 33-36. Determining the output power that is correlated with

a system resource to be assigned, and assigning a system resource to the current subscriber station that is determined to have the minimum output power is disclosed in column 5, Lines 42-51 and column 3, lines 59-63 (disclosing ongoing power control of the channel assigned to the mobile). That the system resource assigned is a spreading code is missing from Yun. However, Yun does disclose in column 2, lines 22-23, that a code in a CDMA system is a channel; Yun is concerned with power control of the channels in the system. Further, Ayagari discloses in paragraphs 24 and 29, computing minimum power levels of codes to be activated and then activating and assigning the lowest-power codes. It would have been obvious to one skilled in the art at the time of the invention to incorporate the assignment method of Ayagari into the power control system of Yun. The motivation would be to maximize capacity utilization in the network within the limited overall power budget (Ayagari, paragraph 10).

Regarding claim 7, a synchronous space division multiple access is disclosed in Yun, column 5, line 32. A code division multiple access communications system is disclosed in column 2, Lines 22-23. A data processor for estimating, within a coverage area of a radio base unit (RBU) having a multi-element antenna array, a spatial signature vector (SSV) for a current subscriber station is disclosed in column 5, lines 45-47 (the spatial signature of the channel) and column 6, Lines 33-36 (the array) of Yun. Using the estimated SSV as a weight vector when determining the output power that is correlated with each of a plurality of spreading code sequences is disclosed in column 6, Lines 33- 36 and column 2, lines 22-23 (in the CDMA implementation, codes are channels, see Yun, column 2, lines 22-23). Assigning a spreading code to the

current subscriber station that is determined to have the minimum output power is missing from Yun. However, Yun does disclose in column 2, lines 22-23, that a code in a CDMA system is a channel; Yun is concerned with the power levels associated with the various channels in the system. Further, Ayagari discloses in paragraphs 24 and 29, computing minimum power levels of codes to be activated and then activating and assigning the lowest-power codes. It would have been obvious to one skilled in the art at the time of the invention to incorporate the assignment method of Ayagari into the ongoing power control system of Yun. The motivation would be to maximize capacity utilization in the network within the limited overall power budget (Ayagari, paragraph 10).

Regarding claim 13, a method for operating a synchronous space division multiple access is disclosed in Yun, column 5, line 32. A code division multiple access communications system for assigning spreading codes to users is disclosed in column 2, lines 22-23. Within a coverage area of a base station (BS) having a multi-element antenna array, estimating a spatial signature vector (SSV) for a current subscriber station is disclosed in column 5, lines 45-47 (the spatial signature) and column 6, Lines 33-36 (the array) of Yun. Using the estimated SSV as a weight vector, determining the output power that is correlated with each of a plurality of spreading code sequences is disclosed in column 6, lines 33-36 and column 2, lines 22-23 (in the CDMA implementation, resources correlate to codes). Assigning a spreading code to the current subscriber station that is determined to have the minimum output power is missing from Yun. However, Yun does disclose in column 2, lines 22-23, that a code in

a CDMA system is a channel; Yun is concerned with the power levels associated with the various channels in the system. Further, Ayagari discloses in paragraphs 24 and 29, computing minimum power levels of codes to be activated and then activating and assigning the lowest-power codes. It would have been obvious to one skilled in the art at the time of the invention to incorporate the assignment method of Ayagari into the ongoing power control system of Yun. The motivation would be to maximize capacity utilization in the network within the limited overall power budget (Ayagari, paragraph 10).

Regarding claims 2, 8, and 14, the step of determining the output power includes steering a beamformer toward the current subscriber station by setting the weight vector equal to the SSV is disclosed in column 5, lines 45-47 (determining the spatial weight vector) and column 26, lines 1-4 (disclosing using beamforming to determine weights).

Regarding claims 3, 9, and 15, the step of determining the output power includes determining the average squared value of the antenna array output that has been despread using a code I is disclosed in column 2, lines 22-23 (in the CDMA implementation, each channel is despread using a code) and column 12, Lines 46.

Regarding claims 4, 10, and 16, the multi-element antenna array has M elements, and wherein the step of determining the output power operates an M-branch receiver to despread a signal received on each element with a spreading code i, to accumulate the despread signal over a symbol duration, to scale the accumulated signal by the weight vector, to sum all of the scaled values and to square the result, and

to average the squared result over R samples to determine the output power for code I for the current subscriber station is disclosed in column 12, lines 36-65.

Regarding claims 6, 12, and 18, the value of R is varied as a function of at least a condition of the channel is disclosed in column 13, column 13, lines 2-7 (disclosing varying the number of samples that the power is determined over) and column 40, lines 15-16.

Allowable Subject Matter

4. Claims 5, 11, and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia L. Davis whose telephone number is (571) 272-3117. The examiner can normally be reached on 8:30 to 6, Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CLD
8/29/2005

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